

Biochemistry ! College of Science & Mathematics

About the Program

Overview

The major in Biochemistry is designed to provide students with fundamental concepts, as well as theoretical and practical aspects unique to the field.

Students are prepared for advanced study in graduate schools and/or for employment in various settings. The major also offers excellent preparation for teaching.

Department history/mission

The biochemistry major is under the umbrella of Physical & Applied Science department.

Unique features

- Scholarly instructors available to work with the student in both the classroom and laboratory
- Provide preparation for research careers, graduate studies, and professional studies
- Opportunity for cooperative education
- Provides varied laboratory experiences
- Small class sizes allow for maximum instructor/student interaction in lecture and lab

Program Specifics

Students have hands-on experience in lab with a wide variety of state-of-the-art instrumentation: IR, UV-VIS, HPLC, GC, fluorimeter, centrifugation, electrophoresis. Students are encouraged to apply for co-op positions in corporate research. Lab assistantships are available for students to gain valuable experience. Field trips are taken to nearby research facilities.

Plan of Study - Bachelor's Degree

Biochemistry Major (38 s.h.)

Required Major Courses:

CHM 1110	General Chemistry I	4 s.h.
CHM 1120	General Chemistry II	4 s.h.
CHM 2210	Organic Chemistry I	4 s.h.
CHM 2220	Organic Chemistry II	4 s.h.
CHM 3310	Quantitative Analysis	4 s.h.
CHM 3610	Biochemistry I	4 s.h.
CHM 3620	Biochemistry II	4 s.h.
CHM 4410	Physical Chemistry I	4 s.h.
CHM 4420	Physical Chemistry II	4 s.h.
CHM 4950	Senior Seminar	<u>2 s.h.</u>
		38 s.h.

Required Support Courses:*

BIO 2240**	Basic Human Physiology	4 s.h.
BIO 2260**	Microbiology	4 s.h.
BIO 3010**	Genetics	4 s.h.
CIS 2800	Introduction to Visual Basic Programming OR	3 s.h.
CSC 2470	Programming: FORTRAN	3 s.h.
MTH 2510	Calculus with Analytic Geometry I	5 s.h.
MTH 2520	Calculus with Analytic Geometry II	4 s.h.
PHY 2530	General Physics I	4 s.h.
PHY 2540	General Physics II	<u>4 s.h.</u>
		35 s.h.

*Required support courses provide a basis for selecting a minor toward secondary certification. These include:

1. Natural Science (24 s.h.) with one approved biology or physics course.
2. Mathematics (20 s.h.) with MTH 2350 plus approved courses from mathematics major which may include one computer science course.
3. Physics (20 s.h.) with PHY 2710, 3510, 4510.
4. Biology (20 s.h.) with BIO 1030, 1040.
5. NSC 2160 Earth Sciences (4 s.h.) or NSC 3290 Principles of Astronomy (4 s.h.) must be taken by those seeking Teacher Certification.

**Biology minor includes these courses plus BIO 1030 and 1040. Pre-professional students should elect a biology minor.



For Admissions Information

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For Program Information

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Teacher Certification

Teacher certification available.
Contact the Education
Department at 734/432-5655 or
432-5647.

Recent Student Research

- Human Genome Project
- Cancer
- Viral Diseases
- Vitamins as Antioxidants

Career Options

- Research
- Education
- Environmental studies
- Hospitals
- Graduate studies
- Professional schools

Selected Course Offerings

General Chemistry I

Principles of chemistry including atomic structure and periodicity, chemical bonding, stoichiometry, gas laws, solution concepts, acid-base theory, redox processes, and equilibrium.

Quantitative Analysis

Theory and techniques of classical quantitative analysis, including acquisition and evaluation of analytical data from gravimetry, titrimetry, potentiometry, and spectrophotometry techniques.

Biochemistry I & II

Principles of biochemistry; major metabolic and biosynthetic pathways, structure and conformation of biological molecules and their molecular biology. Laboratory exercises in enzyme kinetics, electrophoresis, chromatography and DNA isolation and manipulation.

Senior Seminar

Preparation and presentation of a scientific paper. Taken by student with senior status as a requirement for graduation.

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See Advisor/Admissions Office for current information.

Madonna University guarantees the right to equal educational opportunity without discrimination because of race, religion, sex, national origin, age, or disabilities.